

WHAT IS CLAIMED IS:

1. An image reading apparatus comprising:
 - a CCD sensor which converts image information on an object to be read into an image signal;
 - 5 an illumination device which illuminates the object and generates light and shade corresponding to the image information;
 - a mirror set which conveys the light and shade corresponding to the image information to the CCD
 - 10 sensor;
 - a moving mechanism which moves the mirror set along the object at a predetermined speed;
 - a driving device which provides the moving mechanism with a driving force;
 - 15 a first reference level generation mechanism which is provided at a predetermined position on the moving mechanism and allows the CCD sensor to generate a first reference level output without reference to optical intensity of illumination light emitted from the
 - 20 illumination device; and
 - a second reference level generation mechanism which generates reflected light when illuminated by the illumination device, said second reference level generation mechanism being located at a position where
 - 25 the second reference level generation mechanism prevents the reflected light from being transmitted to the CCD sensor, when the first reference level

generation mechanism causes the CCD sensor to produce
the first reference level output, and said second
reference level generation mechanism being moved away
from said position by a predetermined distance, thereby
5 enabling the reflected light to be transmitted to the
CCD sensor without reference to the first reference
level generation mechanism.

2. An image reading apparatus according to
claim 1, wherein said second reference level generation
10 mechanism includes a reference plate which generates a
predetermined amount of reflected light when
illuminated by the illumination device.

3. An image reading apparatus according to
claim 1, wherein said first reference level generation
15 mechanism includes a light shielding member which
shields an optical path the mirror set defines between
the illumination device and the CCD sensor, and which
prevents the illumination light of the illumination
device from falling on the CCD sensor.

20 4. An image reading apparatus according to
claim 1, further comprising:

a position notification mechanism which is
provided at a predetermined position of the moving
mechanism and outputs notification information
25 regarding a position where the moving mechanism is
located; and

a moving mechanism position-detecting device which

is located at a position related to the first and second reference level generation mechanisms, and which detects at least one of passage and arrival of the moving mechanism with reference to the position notification mechanism,

wherein said first reference level generation mechanism allows the CCD sensor to generate the first reference level output when the position notification mechanism of the moving mechanism is sensed by the moving mechanism position-detecting device.

5. An image reading apparatus according to claim 4, wherein said first reference level generation circuit includes a light shielding member which shields an optical path the mirror set defines between the illumination device and the CCD sensor, and which prevents the illumination light of the illumination device from falling on the CCD sensor.

6. An image reading apparatus according to claim 1, further comprising:

20 a position notification mechanism which is provided at a predetermined position of the moving mechanism and outputs notification information regarding a position where the moving mechanism is located; and

25 a moving mechanism position-detecting device which is located at a position related to the first and second reference level generation mechanisms, and which

detects at least one of passage and arrival of the moving mechanism with reference to the position notification mechanism,

wherein said second reference level generation
5 mechanism provides the reflected light for the CCD sensor when the driving device has moved the moving mechanism for a distance defined by a predetermined number of pulses or a predetermined length of time after the moving mechanism position-detecting device.

10 7. An image reading apparatus according to claim 6, wherein said second reference level generation mechanism includes a reference plate which generates a predetermined amount of reflected light when illuminated by the illumination device.

15 8. An image reading apparatus comprising:
a CCD sensor which converts image information on an object to be read into an image signal;
an illumination device which illuminates the object;

20 a first mirror which guides image light in a predetermined direction, said image light being light-and-shade information and including image information which is generated by the object illuminated by the illumination device;

25 a second mirror which guides the image light transmitted from the first mirror such that the image light is guided in a predetermined direction;

a third mirror which guides the image light transmitted from the second mirror such that the image light is guided in a predetermined direction;

a lens which forms an image on the CCD sensor by
converging the image light transmitted from the third
mirror;

a first mirror moving mechanism which holds the first mirror and the illumination device to be movable along the image information on the object;

10 a second mirror moving mechanism which movably
 holds the second mirror and the third mirror, said
 second mirror moving mechanism being moved by the first
 mirror moving mechanism such that a moving distance of
 said second moving mechanism is half that of the first
 mirror moving mechanism;
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a driving device for generating an impulsion force that allows the first and second mirror moving mechanisms to move in a predetermined direction; and

20 a first reference level generation mechanism which
is provided at a predetermined position on the first
mirror moving mechanism and allows the CCD sensor to
generate a first reference level output by shielding a
light path between the second and third mirrors held by
the second mirror moving mechanism when the first
25 mirror moving mechanism is moved in the predetermined
direction by the impulsion force provided by the
driving device; and

a second reference level generation mechanism which generates reflected light when illuminated by the illumination device, said second reference level generation mechanism being located at a position where
5 the second reference level generation mechanism prevents the reflected light from being transmitted to the CCD sensor, when the first reference level generation mechanism causes the CCD sensor to produce the first reference level output, and said second
10 reference level generation mechanism being moved away from said position by a predetermined distance, thereby enabling the reflected light to be transmitted to the CCD sensor without reference to the first reference level generation mechanism.

15 9. An image reading apparatus according to claim 8, further comprising:

20 a position notification mechanism which is provided at a predetermined position of the moving mechanism and outputs notification information regarding a position where the moving mechanism is located; and

25 a moving mechanism position-detecting device which is located at a position related to the first and second reference level generation mechanisms, and which detects at least one of passage and arrival of the moving mechanism with reference to the position notification mechanism,

wherein said first reference level generation mechanism allows the CCD sensor to generate the first reference level output when the position notification mechanism of the moving mechanism is sensed by the moving mechanism position-detecting device.

5 10. An image reading apparatus according to claim 8, further comprising:

a position notification mechanism which is provided at a predetermined position of the moving mechanism and outputs notification information regarding a position where the moving mechanism is located; and

10 15 a moving mechanism position-detecting device which is located at a position related to the first and second reference level generation mechanisms, and which detects at least one of passage and arrival of the moving mechanism with reference to the position notification mechanism,

20 wherein said second reference level generation mechanism provides the reflected light for the CCD sensor when the driving device has moved the moving mechanism for a distance defined by a predetermined number of pulses or a predetermined length of time after the moving mechanism position-detecting device.

25 11. An image reading apparatus according to claim 8, wherein said second reference level generation mechanism includes a reference plate which generates a

predetermined amount of reflected light when illuminated by the illumination device.

12. An image reading apparatus according to claim 9, wherein said second reference level generation mechanism includes a reference plate which generates a predetermined amount of reflected light when illuminated by the illumination device.

13. An image reading apparatus according to claim 10, wherein said second reference level generation mechanism includes a reference plate which generates a predetermined amount of reflected light when illuminated by the illumination device.

14. An image forming apparatus comprising:
an image reading apparatus including:
15 a CCD sensor which converts image information on an object to be read into an image signal;
an illumination device which illuminates the object;

20 a first mirror which guides image light in a predetermined direction, said image light being light-and-shade information and including image information which is generated by the object illuminated by the illumination device;

25 a second mirror which guides the image light transmitted from the first mirror such that the image light is guided in a predetermined direction;

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a third mirror which guides the image light transmitted from the second mirror such that the image light is guided in a predetermined direction;

5 a lens which forms an image on the CCD sensor by converging the image light transmitted from the third mirror;

10 a first mirror moving mechanism which holds the first mirror and the illumination device to be movable along the image information on the object;

15 a second mirror moving mechanism which movably holds the second mirror and the third mirror, said second mirror moving mechanism being moved by the first mirror moving mechanism such that a moving distance of said second moving mechanism is half that of the first mirror moving mechanism;

20 a driving device for generating an impulsion force that allows the first and second mirror moving mechanisms to move in a predetermined direction;

25 a first reference level generation mechanism which is provided at a predetermined position on the first mirror moving mechanism and allows the CCD sensor to generate a first reference level output by shielding a light path between the second and third mirrors held by the second mirror

moving mechanism when the first mirror moving mechanism is moved in the predetermined direction by the impulsion force provided by the driving device;

- 5 a second reference level generation mechanism which generates reflected light when illuminated by the illumination device, said second reference level generation mechanism being located at a position where the second reference level generation mechanism prevents the reflected light from being transmitted to the CCD sensor, when the first reference level generation mechanism causes the CCD sensor to produce the first reference level output, said second reference level generation mechanism being moved away from said position by a predetermined distance, thereby enabling the reflected light to be transmitted to the CCD sensor without reference to the first reference level generation mechanism;
- 10 20 a position notification mechanism provided at a predetermined position of the first mirror moving mechanism and outputting notification information regarding a position where the first mirror moving mechanism is located; and
- 15 25 a moving mechanism position-detecting device which is located at a position related to the first and second reference level generation

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mechanisms, and which detects at least one of passage and arrival of the first mirror moving mechanism with reference to the position notification mechanism;

5 a photosensitive member on which an image corresponding to the image data read by the image reading is formed; and

a developing device for supplying a developing agent to the image formed on the photosensitive member,
10 wherein said first reference level generation mechanism enables the CCD sensor to generate a first reference level when the moving mechanism position-detecting device detects the position notification mechanism provided on the first mirror moving

15 mechanism, and

said second reference level generation mechanism provides reflected light toward the CCD sensor in a preset period of time, said preset period of time starting at a time when the moving mechanism position-detecting device has detected the position notification mechanism provided on the first mirror moving mechanism and ending at a time when the driving device has moved the first mirror moving mechanism by a distance corresponding to a predetermined number of pulses or a
20 predetermined length of time.

25 15. An image forming apparatus according to claim 14, wherein said second reference level

generation mechanism includes a reference plate which generates a predetermined amount of reflected light when illuminated by the illumination device.